UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COLORADO STATE OFFICE
2850 YOUNGFIELD STREET
LAKEWOOD, COLORADO 80215-7093

In Reply Refer To:
7250 (CO-932)

DEC 2 6 2007

Ms. Linda Bassi
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Dear Ms. Bassi:

The Bureau of Land Management (BLM) and the Colorado Division of Wildlife (CDOW) are writing this letter to formally communicate their instream flow recommendation for Baldy Creek, located in Water Division 5.

Location and Land Status. Baldy Creek is tributary to Garfield Creek approximately four miles south of New Castle, Colorado. The creek is located within the lower Colorado River watershed. This recommendation covers the stream reach beginning at the headwaters and extending downstream to the headgate of the Murray and Yule Ditch. Approximately 77 percent of the 9.0-mile reach is located on federal and state lands, while the remaining 23 percent is located on private lands. The headwaters of the creek begin on BLM lands, and then the creek flows into the Garfield Creek State Wildlife Area. From there, the creek flows through a mixture of private and BLM lands before flowing into another CDOW parcel that is part of the Garfield State Wildlife Area.

Biological Summary. Baldy Creek is a high gradient stream, with large substrate size. The creek is often confined by a narrow canyon, and it has cut down to bedrock in numerous locations. The riparian community is very vigorous in the upper portions of the creek. The health of the riparian community is improving on the portions of the creek that are easily accessible for public use and livestock grazing. The creek provides good pool habitat, but low flows in late summer and fall are a limiting factor for the fish population. Fishery surveys indicate that the creek supports self-sustaining population of Colorado River Cutthroat Trout.

R2Cross Analysis. The data analysis, coordinated between BLM and CDOW, indicates that the following flows are needed to protect the fishery and natural environment to a reasonable degree:

- 6.5 cubic feet per second is recommended during the snowmelt runoff period from April 1 through July 15. This recommendation is driven by the average depth and average velocity criteria. Because the creek is characterized by short riffles

between numerous plunge pools, it is very important to maintain adequate velocity and depth in the limited riffle habitat.

- 0.6 cubic feet per second is recommended for the base flow period from July 16 through March 31. This recommendation is driven by water availability. This flow rate does not meet any of the three instream flow criteria, but represents the average amount of water available in the creek. This flow rate will allow fish to survive in pool habitat during base flow periods.

Water Availability. There is one decreed diversion within the proposed instream flow reach, the Fairview Mesa Ditch. This water right is owned by CDOW and is currently not being operated.

BLM does not recommend using the historic U.S. Geological Survey (USGS) gage for Baldy Creek (09088000) that was operated from 1955 to 1961. This gage was located downstream from the Fairview Mesa Ditch, which is decreed for 10 cfs. This ditch was actively diverted during the period of record for the gage. These diversions resulted in very low flow measurements from mid-summer to fall, when the ditch was capable of sweeping the entire flow of the creek. As noted above, this ditch is not currently operating.

BLM recommends using the historic West Divide Creek gage to calculate water availability. This watershed has a very similar slope, aspect, and watershed size. The gage data needs to be adjusted to reflect diversions that occur within the West Divide Creek watershed.

Relationship to Management Plans. Genetic sampling indicates that the Colorado River Cutthroat Trout population is of high genetic quality. Accordingly, BLM will manage this creek to support a conservation population. Data sheets, R2Cross output, fishery survey information, and photographs of the cross sections were submitted with BLM's draft recommendation in February 2007.

We thank both the Water Conservation Board for its cooperation in this effort. If you have any questions regarding our instream flow recommendation, please contact Roy Smith, Water Rights Specialist, at 303-239-3940.

Sincerely,

Dami D. Zachman (Acting)

for Linda M. Anañia
Deputy State Director
Resources and Fire

cc: Jamie Connell, Grand Junction FO
Tom Fresques, Glenwood Springs FO

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Baldy Creek						CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: 0.5 mile upstream from BLM - state boundary						
DATE: 6-12-96	OBSERVERS: T. Ireguoue, R Smith					
LEGAL DESCRIPTION	¼ SECTION: NE	SECTION: 7	TOWNSHIP: 7 N/S	RANGE: 90 E/W	PM: Sixth	
COUNTY: Garfield	WATERSHED: Colorado	WATER DIVISION: 5	DOW WATER CODE: 19253			
MAP(S): USGS: Cedar Mtn. 7.5'						
USFS: Elevation 7,630 ft						

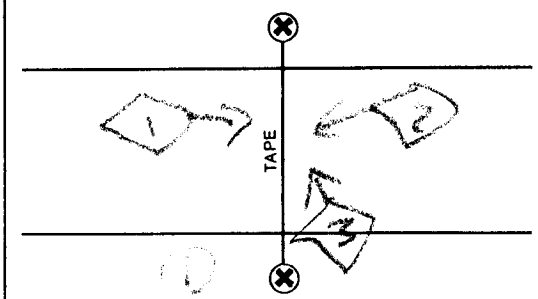
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES/NO	METER TYPE: Marsh-McBirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: 2 to 8" inch cobbles		PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: 3	

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	Surveyed
⊗ Tape @ Stake RB	0.0	Surveyed
① WS @ Tape LB/RB	0.0	6.89/6.99
② WS Upstream	33.0'	5.94
③ WS Downstream	21.0'	7.78
SLOPE	2.04/54.0' = 0.0377	

SKETCH



LEGEND:
Stake ⊗
Station ①
Photo ◇1→
Direction of Flow ←→

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: ____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO
(NO)		(NO)	

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:
mayfly, caddisfly, stonefly

COMMENTS

Ph: 8.0
TDS: 220
Temp: 12°C

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Baldy rock	CROSS-SECTION NO.: 1	DATE: 6-12-06	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: 0.2 ft	TIME: 12:45

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0.0		6.22								
G	1.0		6.39								
	2.5		6.80								
W	3.5		6.89	ϕ							
	4.5		7.08	0.20				1.78			
	5.5		7.13	0.25				ϕ			
	6.5		7.12	0.25				1.73			
	7.5		7.09	0.20				0.59			
	8.5		7.08	0.20				0.36			
	9.5		7.00	0.10				0.76			
	10.5		7.09	0.20				0.48			
	11.5		7.16	0.25				1.30			
13.0 >	12.5	7.34 >	7.34	0.45	< 0.45			2.22	< 2.28		
	13.5		7.36	0.5				2.55			
	14.5		7.22	0.35				1.65			
	15.5		7.14	0.25				1.36			
	16.5		7.19	0.2				0.11			
	17.5		7.18	0.2				0.04			
	18.5		7.40	0.4				1.25			
	19.5		7.47	0.5				0.20			
	20.5		7.19	0.2				0.12			
	21.5		7.32	0.3				0.30			
	22.5		7.22	0.2				0.05			
	23.5		7.13	0.15				0.78			
	24.5		7.08	0.1				0.58			
W	25.5		6.99								
	27.5		6.81								
G	29.0		6.47								
S	31.0		5.81								
TOTALS:											

End of Measurement	Time: 1:20	Gage Reading: 0.2 ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Baldy Creek					CROSS-SECTION NO.: 2	
CROSS-SECTION LOCATION: 0.3 miles upstream from BLM-state boundary						
DATE: 6-12-84	OBSERVERS: T. Fresques, D. Smith					
LEGAL DESCRIPTION	¼ SECTION: NE	SECTION: 7	TOWNSHIP: 7 N/S	RANGE: 90 E/W	PM: 6th	
COUNTY: Garfield	WATERSHED: Colorado	WATER DIVISION: 5	DOW WATER CODE: 19253			
MAP(S): USGS: Center Mtn. 7.5'						
USFS:						

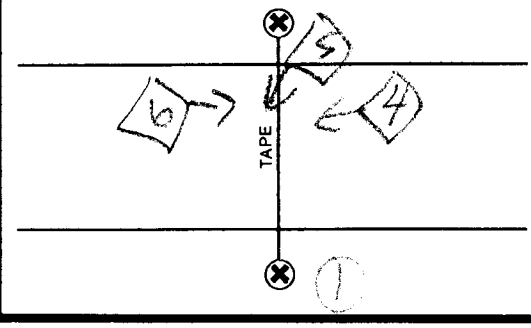
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: Marsh-McBirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: _____ lbs/foot	TAPE TENSION: _____ lbs
CHANNEL BED MATERIAL SIZE RANGE: 2 to 8" cobbles	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	7.41 / 7.41
② WS Upstream	26.0	6.39
③ WS Downstream	26.0	8.45
SLOPE	2.06 / 52.0 = 0.0396	

SKETCH



LEGEND:
Stake ⊗
Station ①
Photo ◇
Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: _____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

Stonefly nymphs, mayfly nymphs, caddis fly castings - Abundant

COMMENTS

pH = 8.0
TDS: 220
Temp. 12°C

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Wildy Creek	CROSS-SECTION NO.: 2	DATE: 6-12-06	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: .3 ft	TIME: 1:35

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0.0		5.64								
G	1.5		6.38								
W	1.9		7.41								
	2.5		7.83	0.40				0.50			
	3.5		8.00	0.60				0.75			
	4.5		7.72	0.50				1.26			
	5.5		7.81	0.40				1.34			
	6.5		7.60	0.20				0.64			
	7.5		7.63	0.20				0.00			
	8.5		7.74	0.30				1.04			
	9.5		7.62	0.20				1.41			
	10.5		7.67	0.25				1.92			
	11.5		7.77	0.35				0.31			
	12.5		7.90	0.50				0.50			
	13.5		7.80	0.40				1.10			
	14.5		7.82	0.40				1.00			
~~16.5~~ 15.5	< 7.89 >		7.79	0.40	< 0.50			1.95	< 1.26		
16.5			7.76	0.35				1.63			
	17.5		7.95	0.55				1.39			
	18.5		7.86	0.45				1.81			
	19.5		7.78	0.40				0.30			
W	20.0		7.41								
	22.0		7.11								
	25.0		6.95								
G	29.0		6.38								
TOTALS:											

End of Measurement	Time: 2:05	Gage Reading: .3 ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

CDOW STREAM SURVEY (1991 REVISION)
LEVEL 2: FIELD SURVEY SUMMARY

STREAM:Baldy Creek SEC#: WATER CODE:19253 CDOW REGION: WE

SURVEYORS: Bill Elmblad, Kevin Chesney DATE OF SURVEY:9/24/01

SURVEY LOCATION: T 7S R 90W S 23 NE ¼ ELEVATION: STATION #:

UTM ZONE: 13 S UTM X: 0292048 UTM Y: 4367519 (lower end of sample reach)

LOCATION DESCRIPTION: at private land

STREAM FLOW PROFILE (Y or N): IF YES-DATE AND TYPE:

HABITAT EVALUATION (Y or N): IF YES-DATE AND TYPE:

WATER CHEMISTRY ANALYSIS (Y or N): IF YES-ATTACH SEPARATE ANALYSIS SHEET

FISH PRESENT (Y or N): Y, POP. EST. METHOD: Seber-LeCren STATION LENGTH: 265(FEET)

AVG. WIDTH: 2.3 (FEET) TOTAL STATION AREA: 0.014(ACRES)

FLOW (CFS) AT TIME OF SURVEY: METHOD:Electrofishing

LIMITING FACTORS TO FISHERY: low stream flows.

COMMENTS: 28 fish taken in two population estimate passes but 23 were age 0 and excluded from estimate. 22 larger fish were taken in one beaver pond outside the population estimate reach and are not included in estimate, fin clips were taken from these fish for genetic analysis.

LENGTH FREQUENCY RECORD (CM)

SPECIES	0 | 2	2 | 4	4 | 6	6 | 8	8 | 10	10 | 12	12 | 14	14 | 16	16 | 18	18 | 20	20 | 22	22 | 24	24 | 26	26 | 28	28 | 30	30 | 32	32 | 34	34 | 36	36 | 38	38 | 40	40 | 42	42 | 44	44 | 46	46 | 48	48 | 50	50 | UP
CRN			21		1	2	6	6	7	1	1	4													

SUMMARY INFORMATION

SPECIES	NO. FISH CAUGHT	AVG. LENGTH (CM)	LENGTH RANGE (CM)	AVG. WEIGHT (Grams)	WEIGHT RANGE (Grams)	% TOTAL CATCH	BIOMASS lb/Acre	DENSITY No./Acre	Conf. Int.
CRN	49	12.4	4.8-238	46.7	7-135	100	42	574	

Reason for survey: fish population survey, take fish tissue for genetic purity analysis.

Conclusions: only cutthroat trout present. Mean Wr for 130-199mm = 79.7 and mean Wr for 200-299mm = 87, condition relatively poor.

Management Implications: possible Colorado River cutthroat trout conservation population. Few adult fish in this stream but good reproduction. Adults mainly in one beaver pond in the sample area.

WATER: **Baldy Creek** COUNTY: **Garfield**

DATE: MM/DD/YY
CODE: 19253
LOCATION: at private land
UTM X: 13 S 0292048
UTM Y: 4367519
CREW: XXXXX
NOTES: o
T7S, R90W, o
Sec. 23 o
NE 1/4 o

SPECIES: **CUTTHROAT TROUT**

STATION LENGTH (ft): 264
STATION WIDTHS (ft):: [redacted]
mean 2.3

station size
acres 0.01
hectares 0.01

MIN SIZE (mm) 90

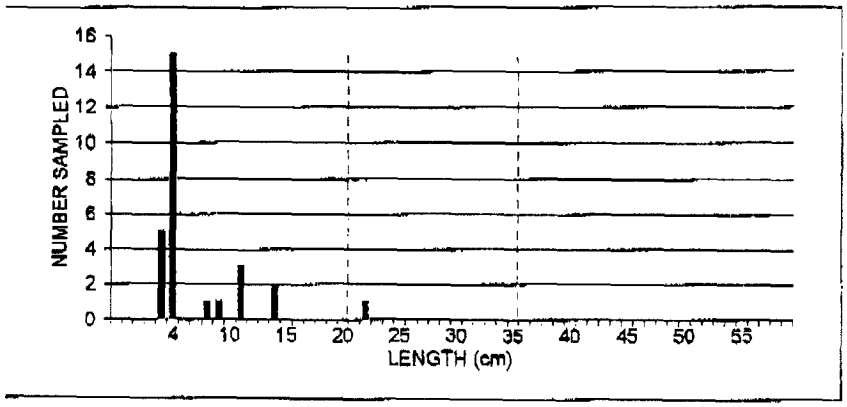
NUMBER/ACR	574	95%CI (+/-): 0
LBS/ACRE	42	95%CI (+/-): 0
NUMBER/HA	1418	95%CI (+/-): 0
KG/HA	47	95%CI (+/-): 0

1st PASS:	8
2nd PASS:	0
Capture P:	1.00
Popn Estimate:	8
95% CI (+/-):	0

LENGTH	WEIGHT	PASS
49		1
59		1
48		1
53		1
51		1
48		1
55		1
60		1
63		1
57		1
105	12	1
126	15	1
62		1
58		1
156	35	1
100	7	1
50		1
61		1
54		1
128	14	1
155	35	1
237	136	1
121	12	1
61		2
56		2
61		2
51		2
50		2

Length (mm)	
Mean	141
Standard Error	15
Variance	1915
Minimum	100
Maximum	237
Count	8
95% CI	30

Weight (g)	
Mean	33
Standard Error	15
Variance	1837
Minimum	7
Maximum	136
Count	8
95% CI	30



[redacted]

NUMBER/MILE	160	95%CI (+/-): 0
LBS/MILE	12	95%CI (+/-): 0
NUMBER/KM	99	95%CI (+/-): 0
KG/KM	3	95%CI (+/-): 0

	Captured		Percent
0-8 Inches	27	0-8 Inches	96
8-14 Inches	1	8-14 Inches	4
>14 Inches	0	>14 Inches	0

-175, R4UW, Sec. 20, NE 1/4

____of____

LAKE Baldy Creek CODE NO. _____ DATE 9/24/01

GEAR Electrofish EFFORT _____ STATION NO. _____

64°F

all fish from one beaver pond

SP	LGTH	WT	MARK
CRN	165	31	
	238	136	
	173	45	
	195	62	
	143	25	
	162	35	
	225	106	
	154	35	
	188	60	
	158	32	
	131	17	
	165	37	
	211	80	
	175	47	
	234	132	
	171	41	
	182	45	
	154	31	
	168	42	
	144	26	
	179	50	
	130	21	
	61		
	56		
	61		
	51		
	50		

2nd Pass

SP	LGTH	WT	MARK
CRN	49	-	
	59	-	
	48	-	
	53	-	
	51	-	
	48	-	
	55	-	
	60	-	
	63	-	
	57	-	
	105	12	
	126	15	
	62	-	
	58	-	
	156	35	
	100	7	
	50	-	
	61	-	
	54	-	
	128	14	
	155	35	
	237	136	
	121	12	

1st Pass

F-19

GPS 13 S 0292048
4367519

Sample Reach = 88m × 0.75m

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME:	Baldy Creek
XS LOCATION:	0.5 mile upstream from BLM-state boundary
XS NUMBER:	1
DATE:	12-Jun-06
OBSERVERS:	R Smith, T Fresques
1/4 SEC:	NE
SECTION:	7
TWP:	7N
RANGE:	90W
PM:	Sixth
COUNTY:	Garfield
WATERSHED:	Colorado
DIVISION:	5
DOW CODE:	19253
USGS MAP:	Center Mtn. 7.5'
USFS MAP:	0

SUPPLEMENTAL DATA

*** NOTE ***
Leave TAPE WT and TENSION at defaults for data collected with a survey level and rod

TAPE WT:	0.0106
TENSION:	99999

CHANNEL PROFILE DATA

SLOPE:	0.0377

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: .....DATE.....

STREAM NAME: Baldy Creek
XS LOCATION: 0.5 mile upstream from BLM-state boundary
XS NUMBER: 1

DATA POINTS= 30

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL
	S	0.00	6.22		
1	G	1.00	6.39		
		2.50	6.80		
	W	3.50	6.89		
		4.50	7.08	0.20	1.76
		5.50	7.13	0.25	0.00
		6.50	7.12	0.25	1.73
		7.50	7.09	0.20	0.59
		8.50	7.08	0.20	0.36
		9.50	7.00	0.10	0.76
		10.50	7.07	0.20	0.48
		11.50	7.16	0.25	1.36
		12.50	7.34	0.45	2.22
		13.00	7.34	0.45	2.28
		13.50	7.36	0.50	2.55
		14.50	7.22	0.35	1.65
		15.50	7.14	0.25	1.36
		16.50	7.19	0.20	0.11
		17.50	7.18	0.20	0.04
		18.50	7.40	0.40	1.25
		19.50	7.47	0.50	0.20
		20.50	7.19	0.20	0.12
		21.50	7.32	0.30	0.30
		22.50	7.22	0.20	0.05
		23.50	7.13	0.15	0.78
		24.50	7.08	0.10	0.58
	W	25.50	6.99		
		27.50	6.81		
1	G	29.00	6.47		
	S	31.00	5.81		

TOTALS ----------

VALUES COMPUTED FROM RAW FIELD DATA

WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
1.02	0.20	0.20	0.36	6.4%
1.00	0.25	0.25	0.00	0.0%
1.00	0.25	0.25	0.43	7.8%
1.00	0.20	0.20	0.12	2.1%
1.00	0.20	0.20	0.07	1.3%
1.00	0.10	0.10	0.08	1.4%
1.00	0.20	0.20	0.10	1.7%
1.00	0.25	0.25	0.34	6.1%
1.02	0.45	0.34	0.75	13.5%
0.50	0.45	0.23	0.51	9.2%
0.50	0.50	0.38	0.96	17.2%
1.01	0.35	0.35	0.58	10.4%
1.00	0.25	0.25	0.34	6.1%
1.00	0.20	0.20	0.02	0.4%
1.00	0.20	0.20	0.01	0.1%
1.02	0.40	0.40	0.50	9.0%
1.00	0.50	0.50	0.10	1.8%
1.04	0.20	0.20	0.02	0.4%
1.01	0.30	0.30	0.09	1.6%
1.00	0.20	0.20	0.01	0.2%
1.00	0.15	0.15	0.12	2.1%
1.00	0.10	0.10	0.06	1.0%
1.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
22.15	0.5 (Max.)	5.44	5.56	100.0%

Manning's n = 0.1107
Hydraulic Radius= 0.245511413

STREAM NAME: Baldy Creek
XS LOCATION: 0.5 mile upstream from BLM-state boundary
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	5.44	5.25	-3.5%
6.69	5.44	11.35	108.8%
6.71	5.44	10.84	99.3%
6.73	5.44	10.32	89.9%
6.75	5.44	9.81	80.5%
6.77	5.44	9.31	71.1%
6.79	5.44	8.80	61.9%
6.81	5.44	8.30	52.7%
6.83	5.44	7.81	43.6%
6.85	5.44	7.32	34.7%
6.87	5.44	6.85	25.9%
6.89	5.44	6.38	17.3%
6.90	5.44	6.15	13.1%
6.91	5.44	5.92	8.9%
6.92	5.44	5.69	4.7%
6.93	5.44	5.47	0.6%
6.94	5.44	5.25	-3.5%
6.95	5.44	5.02	-7.6%
6.96	5.44	4.80	-11.7%
6.97	5.44	4.58	-15.7%
6.98	5.44	4.37	-19.7%
6.99	5.44	4.15	-23.7%
7.01	5.44	3.73	-31.5%
7.03	5.44	3.32	-39.0%
7.05	5.44	2.93	-46.2%
7.07	5.44	2.55	-53.1%
7.09	5.44	2.20	-59.6%
7.11	5.44	1.89	-65.3%
7.13	5.44	1.62	-70.3%
7.15	5.44	1.37	-74.7%
7.17	5.44	1.15	-78.8%
7.19	5.44	0.96	-82.4%

WATERLINE AT ZERO AREA ERROR = 6.931

STREAM NAME: Baldy Creek
XS LOCATION: 0.5 mile upstream from BLM-state boundary
XS NUMBER: 1

Constant Manning's n

"GL" = lowest Grassline elevation corrected for sag
"WL" = Waterline corrected for variations in field measured water surface elevations and sag

STAGING TABLE

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
"GL"	6.47	27.71	0.62	1.00	17.25	27.95	100.0%	0.62	32.60	1.89
	6.48	27.62	0.61	0.99	16.94	27.85	99.7%	0.61	31.68	1.87
	6.53	27.21	0.57	0.94	15.57	27.44	98.2%	0.57	27.80	1.79
	6.58	26.81	0.53	0.89	14.22	27.02	96.7%	0.53	24.14	1.70
	6.63	26.40	0.49	0.84	12.89	26.61	95.2%	0.48	20.71	1.61
	6.68	26.00	0.45	0.79	11.58	26.19	93.7%	0.44	17.50	1.51
	6.73	25.60	0.40	0.74	10.29	25.78	92.2%	0.40	14.53	1.41
	6.78	25.19	0.36	0.69	9.02	25.36	90.7%	0.36	11.79	1.31
	6.83	24.41	0.32	0.64	7.77	24.57	87.9%	0.32	9.40	1.21
	6.88	23.30	0.28	0.59	6.58	23.45	83.9%	0.28	7.35	1.12
"WL"	6.93	22.43	0.24	0.54	5.44	22.58	80.8%	0.24	5.48	1.01
	6.98	21.61	0.20	0.49	4.34	21.75	77.8%	0.20	3.86	0.89
	7.03	19.95	0.16	0.44	3.29	20.08	71.9%	0.16	2.57	0.78
	7.08	17.67	0.13	0.39	2.35	17.79	63.7%	0.13	1.58	0.67
	7.13	12.30	0.13	0.34	1.60	12.42	44.4%	0.13	1.06	0.66
	7.18	9.82	0.11	0.29	1.04	9.92	35.5%	0.10	0.60	0.58
	7.23	6.71	0.10	0.24	0.64	6.79	24.3%	0.09	0.35	0.54
	7.28	4.78	0.07	0.19	0.36	4.84	17.3%	0.07	0.16	0.46
	7.33	3.06	0.05	0.14	0.17	3.09	11.1%	0.05	0.06	0.37
	7.38	1.40	0.05	0.09	0.07	1.42	5.1%	0.05	0.02	0.35
	7.43	0.69	0.02	0.04	0.01	0.70	2.5%	0.02	0.00	0.18

3 of 3 = 6.88 cfs

2 of 3 = 5.35 cfs

STREAM NAME: Baldy Creek
XS LOCATION: 0.5 mile upstream from BLM-state boundary
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	5.56	cfs
CALCULATED FLOW (Qc)=	5.48	cfs
(Qm-Qc)/Qm * 100 =	1.3	%
MEASURED WATERLINE (WLm)=	6.94	ft
CALCULATED WATERLINE (WLc)=	6.93	ft
(WLm-WLc)/WLm * 100 =	0.1	%
MAX MEASURED DEPTH (Dm)=	0.50	ft
MAX CALCULATED DEPTH (Dc)=	0.54	ft
(Dm-Dc)/Dm * 100	-7.7	%
MEAN VELOCITY=	1.01	ft/sec
MANNING'S N=	0.111	
SLOPE=	0.0377	ft/ft
.4 * Qm =	2.2	cfs
2.5 * Qm=	13.9	cfs

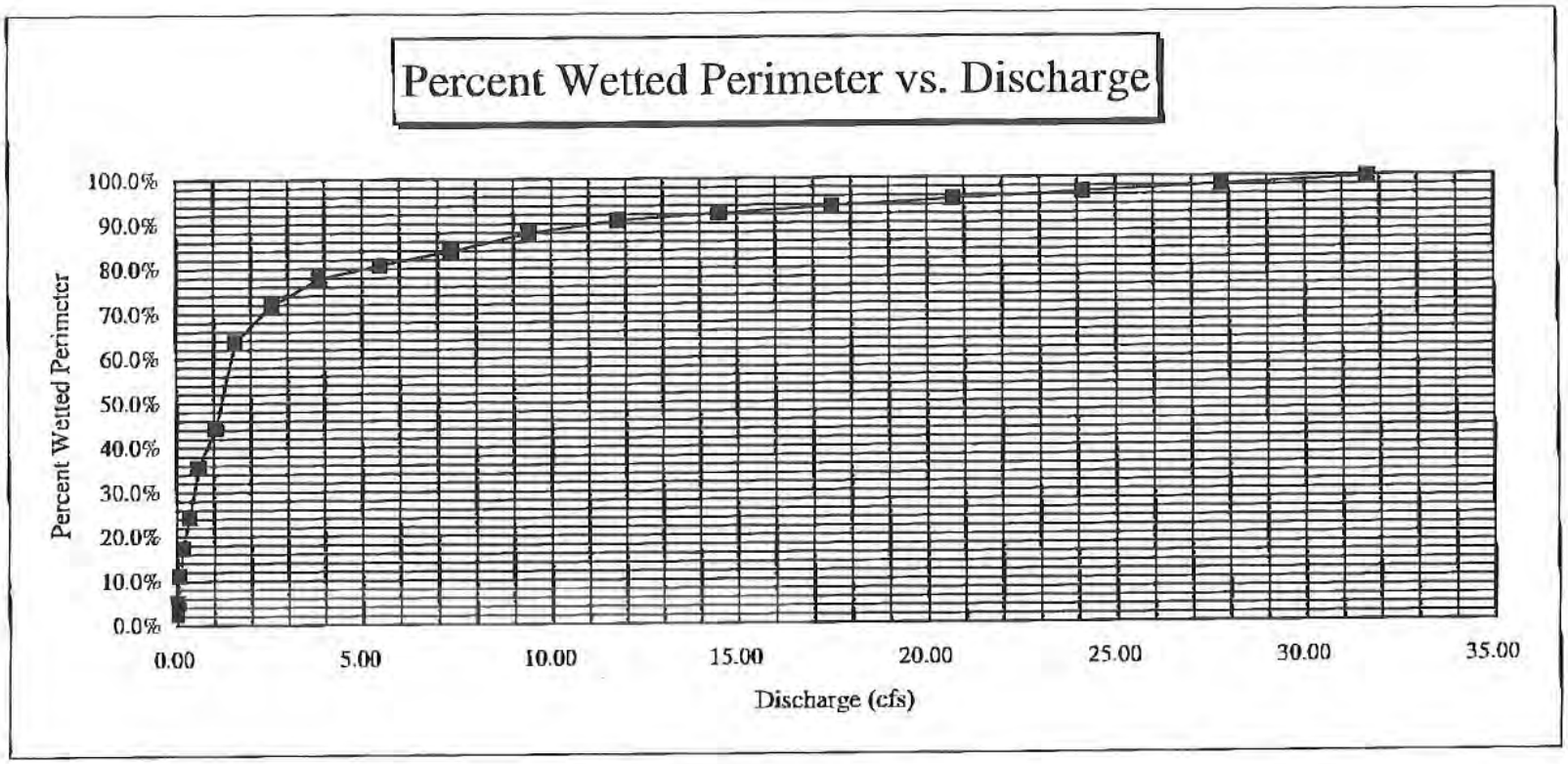
RECOMMENDED INSTREAM FLOW:

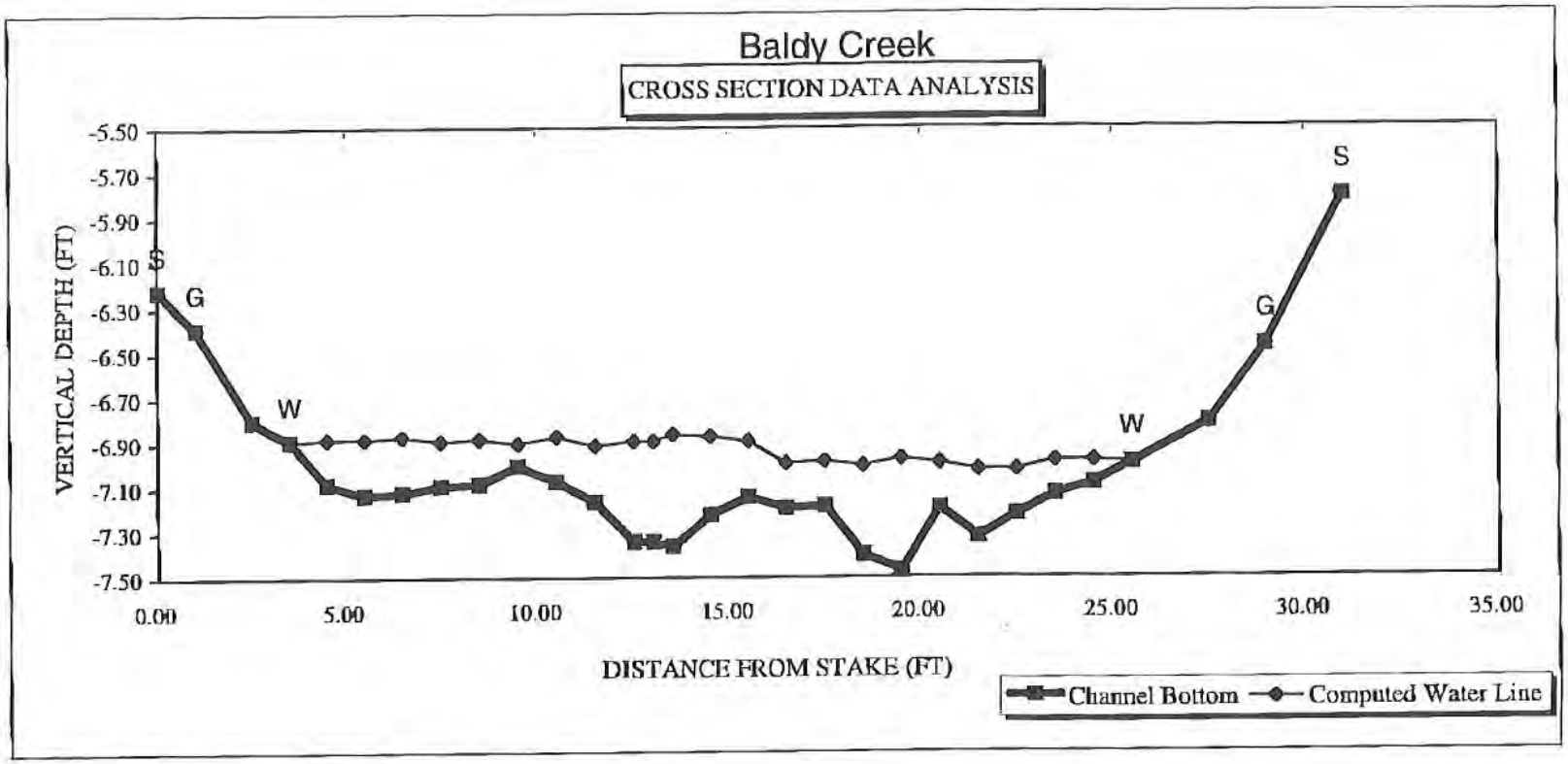
FLOW (CFS)	PERIOD

RATIONALE FOR RECOMMENDATION:

RECOMMENDATION BY: ..... AGENCY..... DATE:.....

CWCB REVIEW BY: ..... DATE:.....





ChartMin	0	ChartMinY	-7.5
ChartMax	35	ChartMaxY	-5.5

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME:	Baldy Creek
XS LOCATION:	0.3 miles upstream from BLM-state boundary
XS NUMBER:	2
DATE:	12-Jun-06
OBSERVERS:	R. Smith, T. Fresques
1/4 SEC:	NE
SECTION:	7
TWP:	7 S
RANGE:	90 W
PM:	Sixth
COUNTY:	Garfield
WATERSHED:	Colorado
DIVISION:	5
DOW CODE:	19253
USGS MAP:	Center Mtn. 7.5'
USFS MAP:	0

SUPPLEMENTAL DATA

*** NOTE ***
Leave TAPE WT and TENSION at defaults for data collected with a survey level and rod

TAPE WT:	0.0106
TENSION:	99999

CHANNEL PROFILE DATA

SLOPE:	0.0396

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: .....DATE.....

STREAM NAME: Baldy Creek
XS LOCATION: 0.3 miles upstream from BLM-state boundary
XS NUMBER: 2

DATA POINTS= 26

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL
	S	0.00	5.64		
1	G	1.50	6.38		
	W	1.90	7.41		
		2.50	7.83	0.40	0.50
		3.50	8.00	0.60	0.75
		4.50	7.92	0.50	1.26
		5.50	7.81	0.40	1.34
		6.50	7.60	0.20	0.64
		7.50	7.63	0.20	0.00
		8.50	7.74	0.30	1.04
		9.50	7.62	0.20	1.41
		10.50	7.67	0.25	1.92
		11.50	7.77	0.35	0.31
		12.50	7.90	0.50	0.50
		13.50	7.80	0.40	1.10
		14.50	7.82	0.40	1.00
		15.50	7.79	0.40	1.95
		16.00	7.89	0.50	1.26
		16.50	7.76	0.35	1.63
		17.50	7.95	0.55	1.39
		18.50	7.86	0.45	1.81
		19.50	7.78	0.40	0.30
	W	20.00	7.41		
		22.00	7.11		
		25.00	6.95		
1	S&G	29.00	6.38		

TOTALS ----------

VALUES COMPUTED FROM RAW FIELD DATA

WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.73	0.40	0.32	0.16	2.2%
1.01	0.60	0.60	0.45	6.3%
1.00	0.50	0.50	0.63	8.8%
1.01	0.40	0.40	0.54	7.5%
1.02	0.20	0.20	0.13	1.8%
1.00	0.20	0.20	0.00	0.0%
1.01	0.30	0.30	0.31	4.3%
1.01	0.20	0.20	0.28	3.9%
1.00	0.25	0.25	0.48	6.7%
1.00	0.35	0.35	0.11	1.5%
1.01	0.50	0.50	0.25	3.5%
1.00	0.40	0.40	0.44	6.1%
1.00	0.40	0.40	0.40	5.6%
1.00	0.40	0.30	0.59	8.2%
0.51	0.50	0.25	0.32	4.4%
0.52	0.35	0.26	0.43	6.0%
1.02	0.55	0.55	0.76	10.7%
1.00	0.45	0.45	0.81	11.4%
1.00	0.40	0.30	0.09	1.3%
0.62		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
18.49	0.6 (Max.)	6.73	7.17	100.0%

Manning's n = 0.1415
Hydraulic Radius= 0.364206559

STREAM NAME: Baldy Creek
XS LOCATION: 0.3 miles upstream from BLM-state boundary
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	6.73	6.75	0.3%
7.16	6.73	11.50	70.8%
7.18	6.73	11.10	64.9%
7.20	6.73	10.71	59.0%
7.22	6.73	10.32	53.2%
7.24	6.73	9.93	47.5%
7.26	6.73	9.55	41.8%
7.28	6.73	9.16	36.1%
7.30	6.73	8.78	30.5%
7.32	6.73	8.41	24.9%
7.34	6.73	8.04	19.4%
7.36	6.73	7.66	13.8%
7.37	6.73	7.48	11.1%
7.38	6.73	7.30	8.4%
7.39	6.73	7.11	5.7%
7.40	6.73	6.93	3.0%
7.41	6.73	6.75	0.3%
7.42	6.73	6.57	-2.4%
7.43	6.73	6.39	-5.1%
7.44	6.73	6.21	-7.8%
7.45	6.73	6.03	-10.4%
7.46	6.73	5.85	-13.1%
7.48	6.73	5.49	-18.4%
7.50	6.73	5.13	-23.8%
7.52	6.73	4.78	-29.0%
7.54	6.73	4.42	-34.3%
7.56	6.73	4.07	-39.6%
7.58	6.73	3.71	-44.8%
7.60	6.73	3.36	-50.1%
7.62	6.73	3.02	-55.2%
7.64	6.73	2.70	-59.9%
7.66	6.73	2.39	-64.5%

WATERLINE AT ZERO
AREA ERROR = 7.411

STREAM NAME: Baldy Creek
XS LOCATION: 0.3 miles upstream from BLM-state boundary
XS NUMBER: 2

Constant Manning's n

STAGING TABLE

GL = lowest Grassline elevation corrected for sag
WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	6.38	27.50	1.11	1.62	30.45	28.66	100.0%	1.06	66.25	2.18
	6.41	27.27	1.09	1.59	29.60	28.40	99.1%	1.04	63.57	2.15
	6.46	26.90	1.05	1.54	28.25	28.00	97.7%	1.01	59.37	2.10
	6.51	26.53	1.01	1.49	26.91	27.59	96.3%	0.98	55.30	2.05
	6.56	26.16	0.98	1.44	25.59	27.18	94.8%	0.94	51.37	2.01
	6.61	25.79	0.94	1.39	24.29	26.77	93.4%	0.91	47.58	1.96
	6.66	25.42	0.91	1.34	23.01	26.36	92.0%	0.87	43.92	1.91
	6.71	25.05	0.87	1.29	21.75	25.96	90.6%	0.84	40.40	1.86
	6.76	24.68	0.83	1.24	20.51	25.55	89.1%	0.80	37.01	1.80
	6.81	24.31	0.79	1.19	19.28	25.14	87.7%	0.77	33.76	1.75
	6.86	23.94	0.76	1.14	18.08	24.73	86.3%	0.73	30.65	1.70
	6.91	23.57	0.72	1.09	16.89	24.32	84.9%	0.69	27.67	1.64
	6.96	23.07	0.68	1.04	15.72	23.79	83.0%	0.66	24.93	1.59
	7.01	22.11	0.66	0.99	14.59	22.79	79.5%	0.64	22.65	1.55
	7.06	21.15	0.64	0.94	13.51	21.80	76.1%	0.62	20.52	1.52
	7.11	20.21	0.62	0.89	12.48	20.82	72.7%	0.60	18.53	1.49
	7.16	19.86	0.58	0.84	11.48	20.43	71.3%	0.56	16.32	1.42
	7.21	19.50	0.54	0.79	10.49	20.04	69.9%	0.52	14.24	1.36
	7.26	19.15	0.50	0.74	9.53	19.65	68.6%	0.48	12.28	1.29
	7.31	18.80	0.46	0.69	8.58	19.26	67.2%	0.45	10.45	1.22
	7.36	18.45	0.41	0.64	7.65	18.87	65.8%	0.41	8.75	1.14
WL	7.41	18.10	0.37	0.59	6.73	18.48	64.5%	0.36	7.17	1.07
	7.46	17.96	0.32	0.54	5.83	18.31	63.9%	0.32	5.68	0.97
	7.51	17.82	0.28	0.49	4.94	18.14	63.3%	0.27	4.33	0.88
	7.56	17.68	0.23	0.44	4.05	17.97	62.7%	0.23	3.13	0.77
	7.61	17.12	0.19	0.39	3.17	17.38	60.6%	0.18	2.13	0.67
	7.66	14.67	0.16	0.34	2.38	14.88	51.9%	0.16	1.46	0.62
	7.71	12.83	0.13	0.29	1.69	13.00	45.3%	0.13	0.91	0.54
	7.76	11.44	0.10	0.24	1.09	11.56	40.3%	0.09	0.47	0.43
	7.81	8.38	0.07	0.19	0.57	8.46	29.5%	0.07	0.20	0.35
	7.86	4.76	0.05	0.14	0.25	4.80	16.7%	0.05	0.07	0.29
	7.91	2.24	0.04	0.09	0.09	2.26	7.9%	0.04	0.02	0.23
	7.96	0.72	0.02	0.04	0.01	0.72	2.5%	0.02	0.00	0.15

STREAM NAME: Baldy Creek
XS LOCATION: 0.3 miles upstream from BLM-state boundary
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	7.17	cfs
CALCULATED FLOW (Qc)=	7.17	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	7.41	ft
CALCULATED WATERLINE (WLc)=	7.41	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.60	ft
MAX CALCULATED DEPTH (Dc)=	0.59	ft
(Dm-Dc)/Dm * 100	1.8	%
MEAN VELOCITY=	1.07	ft/sec
MANNING'S N=	0.142	
SLOPE=	0.0396	ft/ft
.4 * Qm =	2.9	cfs
2.5 * Qm=	17.9	cfs

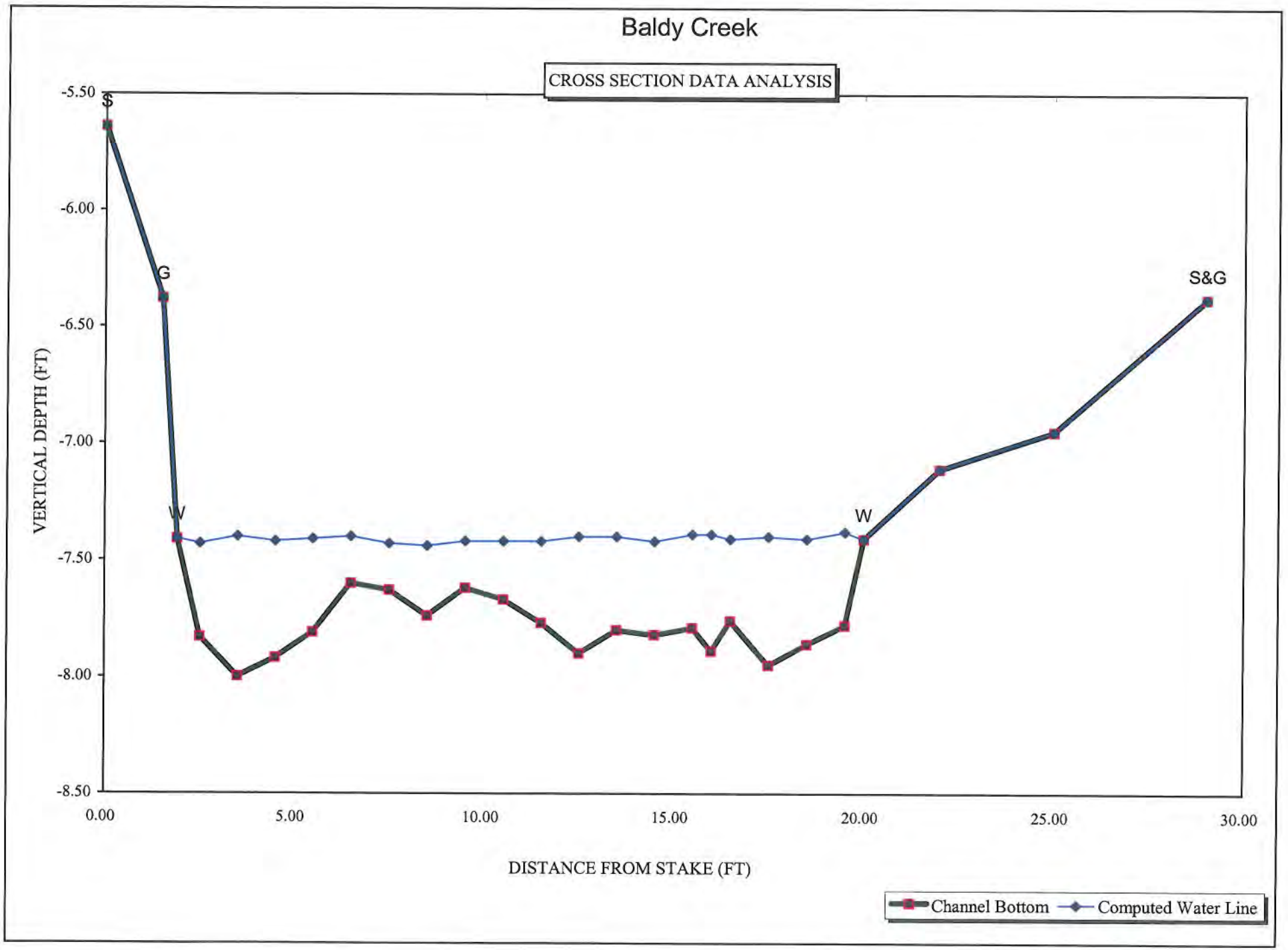
RECOMMENDED INSTREAM FLOW:

FLOW (CFS)	PERIOD

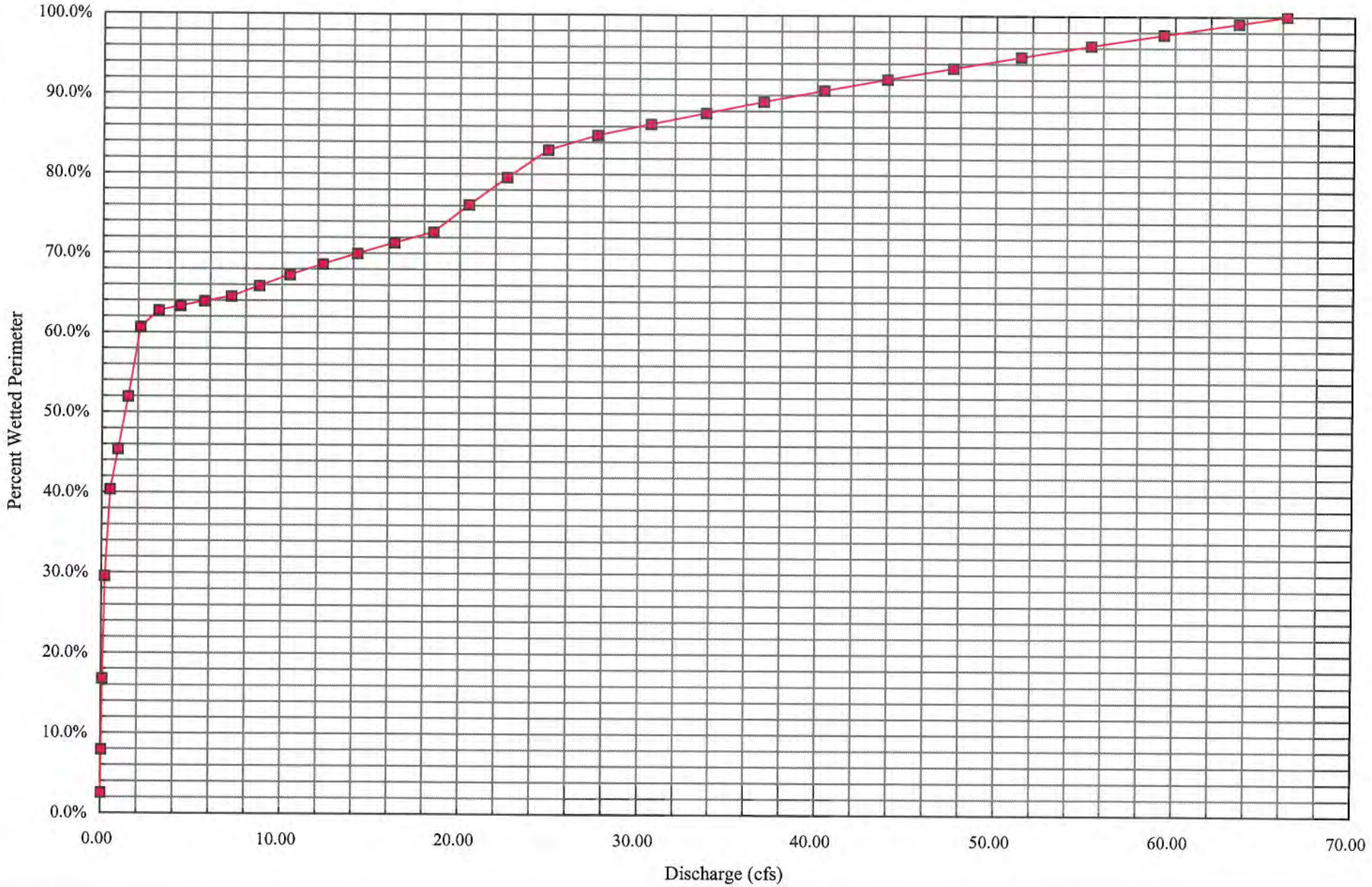
RATIONALE FOR RECOMMENDATION:

RECOMMENDATION BY: ..... AGENCY..... DATE:.....

CWCB REVIEW BY: ..... DATE:.....


Baldy Creek
CROSS SECTION DATA ANALYSIS
-5.50
-6.00
-6.50
-7.00
-7.50
-8.00
-8.50
VERTICAL DEPTH (FT)
S
G
W
W
S&G
0.00
5.00
10.00
15.00
20.00
25.00
30.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line

Percent Wetted Perimeter vs. Discharge



CDOW STREAM SURVEY (1991 REVISION)
LEVEL 2: FIELD SURVEY SUMMARY

STREAM:Baldy Creek SEC#: WATER CODE:19253 CDOW REGION: WE

SURVEYORS: Bill Elmblad, Kevin Chesney DATE OF SURVEY:9/24/01

SURVEY LOCATION: T 7S R 90W S 23 NE ¼ ELEVATION: STATION #:

UTM ZONE: 13 S UTM X: 0292048 UTM Y: 4367519 (lower end of sample reach)

LOCATION DESCRIPTION: at private land

STREAM FLOW PROFILE (Y or N): IF YES-DATE AND TYPE:

HABITAT EVALUATION (Y or N): IF YES-DATE AND TYPE:

WATER CHEMISTRY ANALYSIS (Y or N): IF YES-ATTACH SEPARATE ANALYSIS SHEET

FISH PRESENT (Y or N): Y, POP. EST. METHOD: Seber-LeCren STATION LENGTH: 265(FEET)

AVG. WIDTH: 2.3 (FEET) TOTAL STATION AREA: 0.014(ACRES)

FLOW (CFS) AT TIME OF SURVEY: METHOD:Electrofishing

LIMITING FACTORS TO FISHERY: low stream flows.

COMMENTS: 28 fish taken in two population estimate passes but 23 were age 0 and excluded from estimate. 22 larger fish were taken in one beaver pond outside the population estimate reach and are not included in estimate, fin clips were taken from these fish for genetic analysis.

LENGTH FREQUENCY RECORD (CM)

SPECIES	0 | 2	2 | 4	4 | 6	6 | 8	8 | 10	10 | 12	12 | 14	14 | 16	16 | 18	18 | 20	20 | 22	22 | 24	24 | 26	26 | 28	28 | 30	30 | 32	32 | 34	34 | 36	36 | 38	38 | 40	40 | 42	42 | 44	44 | 46	46 | 48	48 | 50	50 | UP
CRN			21		1	2	6	6	7	1	1	4													

SUMMARY INFORMATION

SPECIES	NO. FISH CAUGHT	AVG. LENGTH (CM)	LENGTH RANGE (CM)	AVG. WEIGHT (Grams)	WEIGHT RANGE (Grams)	% TOTAL CATCH	BIOMASS lb/Acre	DENSITY No./Acre	Conf. Int.
CRN	49	12.4	4.8-238	46.7	7-135	100	42	574	

Reason for survey: fish population survey, take fish tissue for genetic purity analysis.

Conclusions: only cutthroat trout present. Mean Wr for 130-199mm = 79.7 and mean Wr for 200-299mm = 87, condition relatively poor.

Management Implications: possible Colorado River cutthroat trout conservation population. Few adult fish in this stream but good reproduction. Adults mainly in one beaver pond in the sample area.

WATER: **Baldy Creek** COUNTY: **Garfield**

DATE: MM/DD/YY
CODE: 19253
LOCATION: at private land
UTM X: 13 S 0292048
UTM Y: 4367519
CREW: XXXXX
NOTES: o
T7S, R90W, o
Sec. 23 o
NE 1/4 o

SPECIES: **CUTTHROAT TROUT**

STATION LENGTH (ft): 264
STATION WIDTHS (ft):: [redacted]
mean 2.3

station size
acres 0.01
hectares 0.01

MIN SIZE (mm) 90

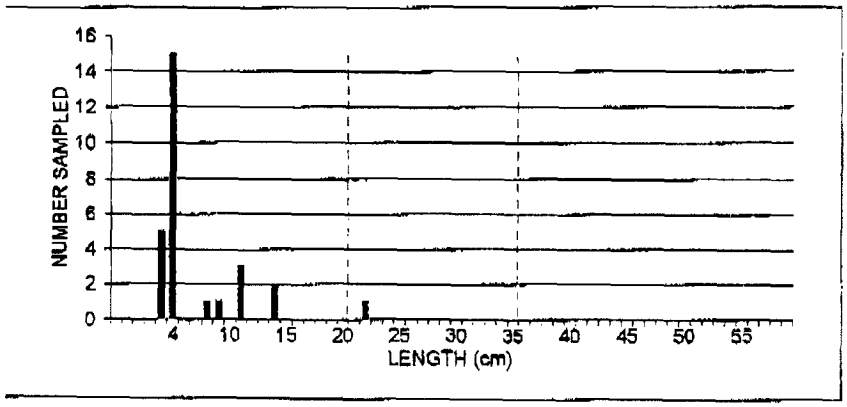
NUMBER/ACR	574	95%CI (+/-): 0
LBS/ACRE	42	95%CI (+/-): 0
NUMBER/HA	1418	95%CI (+/-): 0
KG/HA	47	95%CI (+/-): 0

1st PASS:	8
2nd PASS:	0
Capture P:	1.00
Popn Estimate:	8
95% CI (+/-):	0

LENGTH	WEIGHT	PASS
49		1
59		1
48		1
53		1
51		1
48		1
55		1
60		1
63		1
57		1
105	12	1
126	15	1
62		1
58		1
156	35	1
100	7	1
50		1
61		1
54		1
128	14	1
155	35	1
237	136	1
121	12	1
61		2
56		2
61		2
51		2
50		2

Length (mm)	
Mean	141
Standard Error	15
Variance	1915
Minimum	100
Maximum	237
Count	8
95% CI	30

Weight (g)	
Mean	33
Standard Error	15
Variance	1837
Minimum	7
Maximum	136
Count	8
95% CI	30



[redacted]

NUMBER/MILE	160	95%CI (+/-): 0
LBS/MILE	12	95%CI (+/-): 0
NUMBER/KM	99	95%CI (+/-): 0
KG/KM	3	95%CI (+/-): 0

	Captured		Percent
0-8 Inches	27	0-8 Inches	96
8-14 Inches	1	8-14 Inches	4
>14 Inches	0	>14 Inches	0

-175, R4UW, Sec. 20, NE 1/4

____of____

LAKE Baldy Creek CODE NO. _____ DATE 9/24/01

GEAR Electrofish EFFORT _____ STATION NO. _____

64°F

all fish from one beaver pond

SP	LGTH	WT	MARK
CRN	165	31	
	238	136	
	173	45	
	195	62	
	143	25	
	162	35	
	225	106	
	154	35	
	188	60	
	158	32	
	131	17	
	165	37	
	211	80	
	175	47	
	234	132	
	171	41	
	182	45	
	154	31	
	168	42	
	144	26	
	179	50	
	130	21	
	61		
	56		
	61		
	51		
	50		

2nd Pass

SP	LGTH	WT	MARK
CRN	49	-	
	59	-	
	48	-	
	53	-	
	51	-	
	48	-	
	55	-	
	60	-	
	63	-	
	57	-	
	105	12	
	126	15	
	62	-	
	58	-	
	156	35	
	100	7	
	50	-	
	61	-	
	54	-	
	128	14	
	155	35	
	237	136	
	121	12	

1st Pass

F-19

GPS 13 S 0292048
4367519

Sample Reach = 88m × 0.75m